MULTIMEDIA UNIVERSITY

STUDENT ID NO

MULTIMEDIA UNIVERSITY

FINAL EXAMINATION

TRIMESTER 2, 2022/2023 (T2220)

PBC0016–BASIC COMPUTING AND PROGRAMMING

(Foundation in Engineering)

10 JULY 2023
9.00 a.m. - 11.00 a.m.
(2 Hours)

INSTRUCTIONS TO STUDENT

1. This question paper consists of **FIVE** printed pages with **FOUR** questions.
2. Answer **ALL** questions.
3. Write your answers in the Answer Booklet.

Question 1 (25 marks)

(a) With a suitable example, briefly describe the direction of computer development in terms of size, power and price. [6 marks]

(b) The motherboard in a computer contains the processor or central processing unit of the computer.

(i) Arithmetic logic unit is a part of a central processing unit. Describe **TWO (2)** of its function. [4 marks]

(ii) Briefly describe the function of registers in a processor. [2 marks]

(iii) Does the number of cores affect the performance of a central processing unit? Support your answer with a suitable explanation. [1+2 marks]

(iv) Briefly describe the reason why processors have heat sinks. [2 marks]

(c) Compare the difference between system software and application software. Give **TWO (2)** examples for each type of software that a university student would use. [4+4 marks]

Question 2 (25 marks)

(a) A modem is an example of a communication device.

(i) What is the function of a communication device in a digital communication system? [2 marks]

(ii) What is the function of a dial-up modem? [2 marks]

(iii) Other than modem, briefly describe **TWO (2)** other examples of a communication device. [4 marks]

(b) Compare the difference between network topology and network architecture. Your answer must include **TWO (2)** examples of a network topology and network architecture. [4+4 marks]

(c) Ethernet is the most popular standard for a local area network. Describe **TWO (2)** reasons for this. [4 marks]

(d) Give an example of a website address or uniform resource locator (URL) which has a protocol, domain name, path and file name in the address. Identify each of the component in your answer. [5 marks]

Question 3 (25 marks)

(a) Image A maintains its quality as the size is increased and Image B becomes blurry when its size is increased.

(i) Name the type of graphics for Image A and Image B. [2 marks]

(ii) Which image can be easily edited? Give your reason for this. [1+2 marks]

(iii) Which image has a larger file size? [1 mark]

Continued...

Question 3 (Continued...)

(b) Briefly describe with a suitable example how Internet of Things technology can be used in the following field. [6 marks]
(i) Security
(ii) Fire safety
(iii) Entertainment

(c) Determine the amount of storage needed (in GB) to store 2000 images and 2 video files if each image size is approximately 3 MB and each video size is approximately 500, 000 KB. [3 marks]

(d) Briefly describe the following terms:
(i) Cloud storage [3 marks]
(ii) Artificial intelligence [2 marks]
(iii) 3-D printer [2 marks]
(iv) Virtual reality [3 marks]

Question 4 (25 marks)

(a) Construct logical expressions to represent each of the following conditions: You must use logical connectives to join expressions. [4 marks]

Conditions	Logical expression
Example: number is less than 5	number < 5
weight is greater than or equal to 50 but less than or equal to 60	
grade is either 'A' or 'B'	

(b) Write a C statement to declare the following variables and its values. [4 marks]

Variable name	Assigned value	Variable declaration
Example: weight	75	int weight = 75;
height	180.20	
grade	A	

Continued...

Question 4 (Continued...)

(c) State the output of the following C program. [4 marks]

```
#include <stdio.h>
int main()
{

int max = 65;
int min = 35;

printf("%d %d \n", max, max+100);
printf("%d %d %d\n", max, min, max-30);

return 0;
}
```

(d) Give **TWO (2)** examples of syntax errors that can occur in the skeleton of a C program. You must write the errors and correct it. [4 marks]

(e) Table Q4 shows the scores required to unlock a certain level in a game. The C program will prompt the user to enter their score and display the level unlocked. Complete the following C program in Figure Q4 (b) by filling in the blank spaces from (i) to (ix). The outputs of the program can be seen in Figure Q4 (a). [9 marks]

Table Q4: Scores required to unlock a certain level in a game.

Level	Score
1	99 and below
2	100 to 199
3	200 to 299
4	300 and above

```
Please enter your score: 70
You have unlocked Level 1.
```

```
Please enter your score: 150
You have unlocked Level 2.
```

```
Please enter your score: 220
You have unlocked Level 3.
```

```
Please enter your score: 500
You have unlocked Level 4.
```

Figure Q4 (a): Sample Outputs (**Bold and underlined** represents the user's input)

Continued...

Question 4 (Continued...)

```
#include _(A)_

int main()
{
_____(i)___;

printf("_____(ii)_____");
scanf("___(iii)___", ___(iv)_____);

if (____(v)_____)
printf("You have unlocked Level 1.");

else if (____(vi)_____)
printf("You have unlocked Level 2.");

else if (____(vii)_____)
printf("You have unlocked Level 3.");

____(viii)_____ (____(ix)_____)
printf("You have unlocked Level 4.");

return 0;
}
```

Figure Q4 (b): Incomplete C program source code

Note:

- Do not rewrite the entire C program in Figure Q4 (b). Only write the C statements that are missing from (i) to (ix) in Figure Q4 (b).
- The C statements filled in must be the same as the relevant sample outputs.
- Each answer from (i) to (ix) will be 1 mark each and must be correctly labelled in your answer.
- An example for the answer is shown for the underlined '(A)' in the incomplete C program source code, where the answer must be written as below:
  (A) <stdio.h>

End of Paper